

## § 154.526

(3) An inert gas back-up on the first weld pass.

(b) A slip-on welded joint with sleeves and attachment welds is allowed for an open ended pipe with an external diameter of 50 mm (2 in.) or less and a design temperature of  $-55^{\circ}\text{C}$  ( $-67^{\circ}\text{F}$ ), or warmer.

(c) A socket weld fitting with attachment welds is allowed for pipe with an external diameter of 50 mm (2 in.) or less and a design temperature of  $-55^{\circ}\text{C}$  ( $-67^{\circ}\text{F}$ ) or warmer.

(d) Screwed couplings are allowed for instrumentation and control piping that meets § 56.30-20 and § 56.50-105 (a)(4) and (b)(4) of this chapter.

(e) A method or fitting specially approved by the Commandant (CG-522).

[CGD 74-289, 44 FR 26009, May 3, 1979, as amended by CGD 82-063b, 48 FR 4782, Feb. 3, 1983]

## § 154.526 Piping joints: Flange connection.

Flange connections for pipe joints must meet § 56.30-10 and § 56.50-105 (a)(4) and (b)(4) of this chapter.

## § 154.528 Piping joints: Flange type.

(a) A flange must be one of the following types:

- (1) Welding neck.
- (2) Slip-on.
- (3) Socket weld.

(b) If the piping is designed for a temperature between  $-10^{\circ}\text{C}$  ( $14^{\circ}\text{F}$ ) and  $-55^{\circ}\text{C}$  ( $-67^{\circ}\text{F}$ ), the pipe flange may be a:

- (1) Slip-on type, if the nominal pipe size is 100 mm (4 in.) or less;
- (2) Socket weld, if the nominal pipe size is 50 mm (2 in.) or less; or
- (3) Welding neck.

(c) If the piping is designed for a temperature lower than  $-55^{\circ}\text{C}$  ( $-67^{\circ}\text{F}$ ), the pipe flange must be a welding neck type.

## § 154.530 Valves: Cargo tank MARVS 69 kPa gauge (10 psig) or lower.

(a) Except those connections for tank safety relief valves and for liquid level gauging devices other than those under §§ 154.536 and 154.1310, liquid and vapor connections on a cargo tank with a MARVS of 69 kPa gauge (10 psig) or lower must have shut-off valves that—

(1) Are located as close to the tank as practical;

(2) Are capable of local manual operation; and

(3) May be remotely controlled.

(b) The cargo piping system for a cargo tank with a MARVS of 69 kPa gauge (10 psig) or lower must have at least one remotely controlled quick-closing shut-off valve for closing liquid and vapor piping between vessel and shore that meets §§ 154.540 and 154.544.

[CGD 74-289, 44 FR 26009, May 3, 1979, as amended by CGD 77-069, 52 FR 31630, Aug. 21, 1987]

## § 154.532 Valves: Cargo tank MARVS greater than 69 kPa gauge (10 psig).

(a) Except connections for tank safety relief valves and except for liquid level gauging devices other than those under §§ 154.536 and 154.1310, liquid and vapor connections on a cargo tank with a MARVS greater than 69 kPa gauge (10 psig) must have, as close to the tank as practical, a:

(1) Stop valve capable of local manual operation; and

(2) A remotely controlled quick-closing shut-off valve.

(b) If the nominal pipe size of a liquid or vapor connection is less than 50 mm (2 in.), an excess flow valve may be substituted for the quick-closing valve under paragraph (a) of this section.

(c) One valve may be substituted for the manual controlled stop valve and the remotely controlled quick-closing shut-off valve required under paragraph (a) of this section if that valve:

- (1) Meets §§ 154.540 and 154.544; and
- (2) Is capable of local manual operation.

## § 154.534 Cargo pumps and cargo compressors.

Cargo pumps and cargo compressors must shut-down automatically when the quick-closing shut-off valves under §§ 154.530 and 154.532 are closed by the emergency shut-down system required under § 154.540.

## § 154.536 Cargo tank gauging and measuring connections.

Unless the outward flow from a cargo tank is less than the flow through a circular hole of 1.4 mm (0.055 in.) in diameter, cargo tank connections for

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gauging or measuring devices must have the excess flow, shut-off, or quick-closing shut-off valves under §154.530 or §154.532.

### § 154.538 Cargo transfer connection.

A cargo transfer connection must have a:

- (a) Remotely controlled quick-closing shut-off valve that meets §§154.540 and 154.544; or
- (b) Blank flange.

### § 154.540 Quick-closing shut-off valves: Emergency shut-down system.

The quick-closing shut-off valves under §§154.530, 154.532, and 154.538 must have an emergency shut-down system that:

- (a) Closes all the valves;
- (b) Is actuated by a single control in at least two locations remote from the quick-closing valves;
- (c) Is actuated by a single control in each cargo control station under §154.320; and
- (d) Has fusible elements at each tank dome and cargo loading and discharge manifold that melt between 98 °C (208 °F) and 104 °C (220 °F) and actuate the emergency shut-down system.

### § 154.544 Quick-closing shut-off valves.

The quick-closing shut-off valve under §§154.530, 154.532 and 154.538 must:

- (a) Be a shut-off valve;
- (b) Close from the time of actuation in 30 seconds or less;
- (c) Be the fail-closed type; and
- (d) Be capable of local manual closing.

[CGD 74-289, 44 FR 26009, May 3, 1979, as amended by CGD 77-069, 52 FR 31630, Aug. 21, 1987]

### § 154.546 Excess flow valve: Closing flow.

- (a) The rated closing flow of vapor or liquid cargo for an excess flow valve must be specially approved by the Commandant (CG-522).
- (b) An excess flow valve allowed under §154.532(b) must close automatically at the rated closing flow.

[CGD 74-289, 44 FR 26009, May 3, 1979, as amended by CGD 82-063b, 48 FR 4782, Feb. 3, 1983]

### § 154.548 Cargo piping: Flow capacity.

Piping with an excess flow valve must have a vapor or liquid flow capacity that is greater than the rated closing flow under §154.546.

### § 154.550 Excess flow valve: Bypass.

If the excess flow valve allowed under §154.532(b) has a bypass, the bypass must be of 1.0 mm (0.0394 in.) or less in diameter.

## CARGO HOSE

### § 154.551 Cargo hose: General.

Each of the vessel's liquid and vapor cargo hose for loading or discharging cargo must meet §§154.552 through 154.562.

### § 154.552 Cargo hose: Compatibility.

- Liquid and vapor cargo hoses must:
- (a) Not chemically react with the cargo; and
  - (b) Withstand design temperature.

### § 154.554 Cargo hose: Bursting pressure.

Cargo hose that may be exposed to the pressure in the cargo tank, the cargo pump discharge, or the vapor compressor discharge must have a bursting pressure of at least five times the maximum working pressure on the hose during cargo transfer.

### § 154.556 Cargo hose: Maximum working pressure.

A cargo hose must have a maximum working pressure not less than the maximum pressure to which it may be subjected and at least 1034 kPa gauge (150 psig).

### § 154.558 Cargo hose: Marking.

Each cargo hose must be marked with the:

- (a) Maximum working pressure; and
- (b) Minimum service temperature for service at other than ambient temperature.

### § 154.560 Cargo hose: Prototype test.

- (a) Each cargo hose must be of a type that passes a prototype test at a pressure of at least five times its maximum working pressure at or below the minimum service temperature.